

Appl. No. 10/644,475
Amdt. Dated November 30, 2004
Reply to Office action of August 30, 2004

REMARKS

The Applicant has closely reviewed the Office action of August 30, 2004 and thanks Examiner Jules for his detailed review of the pending claims. Claims 1-19 were rejected. In response to the rejections independent claims 1, 8 and 14 have been amended. Accordingly, claims 1-19 remain pending in the present application. In view of the above amendment and following remarks the Applicant believes the claims are in condition for allowance and respectfully requests that the Examiner pass the application to issue.

Claim Rejection Under 35 U.S.C. §102(e)(1)

The Office action rejects claims 1-3 and 5-13 under 35 U.S.C. §102(e)(1) as being anticipated by Jaekel (U.S. Patent No. 6,543,266). In view of the amendments to independent claims 1 and 8 the applicant respectfully traverse the rejection.

Jaekel discloses a hydroformed collapsible shaft 20 having a first portion with a generally reduced diameter, D_{01} , as compared to the inner and outer diameters, D_{12} and D_{02} , respectively of a second portion 22. During a vehicle collision an axial force, P , deforms the first portion 24 into the second portion 22 thereby forming a first fold 38, an intermediate portion 30 and a second fold 32. (See column 3, lines 27-38 of the Jaekel patent.) These features are the result of an axial force resultant from a vehicle collision and are illustrated in Figure 4 of the Jaekel patent.

In contrast, the claimed invention includes a portion of the cylindrical body lying over the intermediate portion prior to receiving a sufficient axial load from a crash event. When the claimed propeller shaft is subject to sufficient axial load during a crash event, the transition region 30 fractures and the body of the shaft telescopes the intermediate region 26. When the shaft of the Jaekel patent is subjected to a crash event the shaft plastically deforms to form the overlapping folds. The present invention includes the cylindrical body lying over the intermediate portion prior to the crash event in order to control the fracture and crash-worthiness of the claimed propeller shaft.

Accordingly, the Jaekel patent fails to teach each limitation of the claimed invention. Specifically, the Jaekel patent fails to teach or even suggested the cylindrical body lying over the intermediate portion prior to receiving a sufficient axial load from a crash event. For at least this reason the independent claims 1 and 8 are patentable. Further, claims 2-3, 5-7 and 9-13 are dependent claims adding further patentable features to the independent claims. For at least this

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reason these claims are also patentable. Accordingly, the Applicant respectfully request removal of the rejection.

Claim Rejections Under 35 U.S.C. §103(a)

The Office action rejects claims 4 and 14-19 under 35 U.S.C. §103(a) as being unpatentable over Jaekel in view of Thompson (U.S. Patent No. 2,988,805). Again, in view of the amendment to independent claims 1 and 14, the Applicant respectfully traverses the rejection.

As discussed above with respect to the rejection under 35 U.S.C. 102§(e)(1). Claim 1 includes the patent feature of having a portion of the cylindrical body lie over the intermediate region prior to receiving a sufficient axial load from a crash event. Claim 4 is a dependent claim adding an additional patentable feature. For at least this reason claim 4 is also patentable.

Regarding claims 14-19, the arguments presented above with regard to the rejection under 35 U.S.C. §102(e)(1) also apply. To sustain a case of prima facie obviousness the references must teach or suggest each limitation of the claims. Nothing in the Jaekel or Thompson patents, either alone or in combination, teach or suggest the patentable feature of a portion of the cylindrical body lying over the intermediate region prior to receiving a sufficient axial load from a crash event. Accordingly, for at least this reason claims 14-19 are non-obvious and hence patentable.

Therefore, for the reasons present above, the Applicant respectfully requests removal of the rejections as to claims 4 and 14-19.

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Conclusion

The Applicant believes the claims of the present application are in condition for allowance. It is respectfully requested that the Examiner pass the application to issue.

Respectfully submitted,

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